ASSESSING THE ECOLOGICAL AND ECONOMIC SUSTAINABILITY OF TOURISM IN ST. LUCIA VIA THE ECOLOGICAL FOOTPRINT AND TOURISM MULTIPLIERS

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Presentation outline

- Relevance of tourism
- Sustainable Development Literature
- Methodology
- Findings and Analysis
- Recommendations and Policy Conclusions
The tourism industry is the fastest growing industry in the Caribbean and is the single most common industry in the region.

The Caribbean is the most tourism intensive region in the world.

Tourism receipts for the Caribbean region increased by US$ 8.2 billion, for the period 1994 to 2004; this represents an increase of 61.19%.
Sustainable development literature

- Progress that meets the needs of the present without compromising the ability of future generations to meet their own needs. (Brundtland Commission 1987)

- Sustainable Tourism is concerned with the identification of the carrying capacity of society and its ecological system. (Pantin 1999, 3)

- Management of tourism ... that fulfils economic, social and aesthetic needs while maintaining ecological processes, biological diversity ... bringing equitably distributed socio-economic benefits to residents of the host country. (Inskeep 1993, 31)
<table>
<thead>
<tr>
<th>Economic Indicator</th>
<th>Socio-Cultural Indicator</th>
<th>Environmental Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment</td>
<td>Access of residents to beach/tourist facilities</td>
<td>Waste generation, treatment and impact</td>
</tr>
<tr>
<td>-Total</td>
<td>•Contribution of tourism expenditure to</td>
<td>•Ecological impact of tourist visits to nature sites e.g. reefs, protected areas etc.</td>
</tr>
<tr>
<td>-Structure</td>
<td>-maintenance/preservation/enhancement of natural heritage</td>
<td>•Risk reduction measures in place by hotels and communities</td>
</tr>
<tr>
<td>Net ForEx Earnings</td>
<td>•Demand for cultural products</td>
<td>•Land use planning and zoning enforcement for tourism plant and machinery</td>
</tr>
<tr>
<td>Domestic Linkages and Value Added to GDP</td>
<td>•Community involvement in tourism planning and implementation</td>
<td></td>
</tr>
<tr>
<td>Share of profits accruing nationally via</td>
<td>•Level of Public Education on Disaster Risk</td>
<td></td>
</tr>
<tr>
<td>-Corporation Taxes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Retained Profits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact on Domestic Prices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nationality of ownership of tourist facilities</td>
<td></td>
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</tbody>
</table>
Sustainable development literature

- Traditional indicators of sustainable tourism measure changes in the local environment but ignore the global impact of tourism. The ecological footprint is inclusive of all facets of tourism both at the national and global level.

- The Ecological Footprint measures humanity’s demand on the biosphere in terms of the area of biologically productive land and sea required to provide the resources we use and to absorb our waste. (Living Planet report 2008)

- Bio-capacity refers to a country’s capacity to absorb waste emitted. (Living Planet report 2008)
Tourism multiplier is a tool which measures the relationship between an injection of tourist expenditure into an economy and the amount of economic activity which is created by this expenditure. (Archer 1988, 6)

Tourism revenue will impact the economy via primary (direct) effects and secondary (indirect and induced) effects.
Methodology

- The ecological footprint can be calculated using two methods: the compound (top-down) approach or the component based (bottom-up) approach.
- Main components of the ecological footprint are: transportation to the destination and transportation within the destination, energy consumption, land usage, food and fibre consumed, waste generation.
- Multipliers which have been computed: Keynesian Multiplier, Income Ratio multiplier, total employment contribution multiplier.
Findings and analysis: Ecological Footprint

1. Use data on tourist arrivals for 2010 to determine the points of origin of tourists.
2. Determine the distance of the source country from the destination area, and derive the round trip distance.
3. Use round-trip distance to obtain energy use per tourist by multiplying distance by an energy intensity factor.
4. Calculate the equivalent land area per tourist by dividing the energy use per tourist by the number of gigajoules of energy that 1 hectare of forest will sequester in CO$_2$.
5. Adjust for the impact of radiative force.
Findings and analysis: ecological footprint

6. Adjust for the difference in productivity between forest land and the world average space.

7. Calculate the ecological footprint at the destination area by prorating the host ecological footprint based on the average number of days of vacation.

8. Calculate the ecological footprint of tourist which has not been incurred at home as a result of their vacation.

9. \[ \text{Ecological Footprint} = \text{Transit Zone EF} + \text{Destination Area EF} - \text{Impact while at Home} \]

10. \[ \text{Ecological Footprint} = 5.84 \text{ gha} + 0.0455 \text{ gha} - 0.14339 \text{ gha} = 5.723 \text{ gha} \]
Findings and analysis: qualitative analysis

- Energy Usage
- Wage generation and Treatment
- Food and beverage consumption
- Travel within destination
- Land usage
- Awareness of sustainable tourism
Findings and analysis: economic multipliers

- Direct Keynesian Multiplier = Contribution Tourist economy/Tourist Expenditure
  - Shows income generated in the tourism economy per unit of tourist spending.

- Indirect Keynesian Multiplier = Contribution General Economy/Tourist Expenditure
  - Shows income is generated in the general economy per unit of tourist spending

- Leakages = 1 − Total Keynesian Multiplier
  - Shows the proportion of each dollar of tourist expenditure which leaves the local economy
Findings and analysis: Economic Multipliers

- Ratio Multiplier = \[ \frac{\text{Indirect Keynesian Multiplier}}{\text{Direct Keynesian Multiplier}} \]

- Linkages = 1 + Ratio Multiplier

- Ratio multiplier and Linkages provide an indication of how tourism revenue is distributed to the non-tourism economy. The higher the ratio, the greater the distribution of tourists’ revenue among the other sectors within the economy.
### Findings and analysis: Economic Multipliers

<table>
<thead>
<tr>
<th>Year</th>
<th>Direct Keynesian Multiplier</th>
<th>Indirect Keynesian Multiplier</th>
<th>Total Keynesian Multiplier</th>
<th>Leakages</th>
<th>Linkages</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>0.429</td>
<td>0.796</td>
<td>1.225</td>
<td>-0.225</td>
<td>2.857</td>
</tr>
<tr>
<td>2002</td>
<td>0.447</td>
<td>0.886</td>
<td>1.333</td>
<td>-0.333</td>
<td>2.983</td>
</tr>
<tr>
<td>2003</td>
<td>0.458</td>
<td>0.812</td>
<td>1.27</td>
<td>-0.27</td>
<td>2.772</td>
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<tr>
<td>2004</td>
<td>0.462</td>
<td>0.815</td>
<td>1.277</td>
<td>-0.277</td>
<td>2.766</td>
</tr>
<tr>
<td>2005</td>
<td>0.47</td>
<td>0.842</td>
<td>1.312</td>
<td>-0.313</td>
<td>2.792</td>
</tr>
<tr>
<td>2006</td>
<td>0.451</td>
<td>0.922</td>
<td>1.373</td>
<td>-0.373</td>
<td>3.045</td>
</tr>
<tr>
<td>2007</td>
<td>0.445</td>
<td>0.885</td>
<td>1.33</td>
<td>-0.33</td>
<td>2.988</td>
</tr>
<tr>
<td>2008</td>
<td>0.437</td>
<td>0.829</td>
<td>1.266</td>
<td>-0.266</td>
<td>2.899</td>
</tr>
<tr>
<td>2009</td>
<td>0.433</td>
<td>0.823</td>
<td>1.256</td>
<td>-0.256</td>
<td>2.902</td>
</tr>
<tr>
<td>2010</td>
<td>0.436</td>
<td>0.82</td>
<td>1.256</td>
<td>-0.256</td>
<td>2.879</td>
</tr>
<tr>
<td>2011</td>
<td>0.432</td>
<td>0.834</td>
<td>1.266</td>
<td>-0.266</td>
<td>2.93</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td><strong>0.446</strong></td>
<td><strong>0.842</strong></td>
<td><strong>1.288</strong></td>
<td><strong>-0.288</strong></td>
<td><strong>2.892</strong></td>
</tr>
</tbody>
</table>
Findings and analysis:
Contribution to total employment ratio
Recommendations

- Establishment of a contingent valuation model to offset the environmental impact of travel to St. Lucia.
- Attempt to find other possible tourism markets for St. Lucia.
- Increase the level of education and awareness of tourism operators in St. Lucia.
- Use of market based initiatives by the government to influence the operations of properties in St. Lucia.
- The introduction of alternative modes of transportation specifically for regional travel.
- The use of private/public partnerships between the Government of St. Lucia and tourism proprietors to improve the sustainability of the tourism product.
- Undertake an assessment of the St. Lucian economy to determine what linkages can be created or improved between local industries and the tourism industry.
THANK YOU